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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/722,030

11/25/2003

Marcus Pfister

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PATENT DEPARTMENT
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EXAMINER

LUONG, PETER

ART UNIT

PAPER NUMBER

3709

MAIL DATE

DELIVERY MODE

08/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/722,030

Applicant(s)

PFISTER ET AL.

Examiner

Peter Luong

Art Unit

3709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 4/30/04

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: reference character "26" in figure 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

Art Unit: 3709

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it has more than one paragraph and over 150 words. Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities: on page 4, paragraph 2, "The guide field are transformed" should be --The guide fields are transformed--, on page 7, paragraph 4, "electrical control device 4" should be --electrical device 5--, on page 8, section (a), "whereby $N = N_1 + N_2$ " is missing a leading parenthesis, and on page 9, section (b), reference character "1" was previously referred to as tissue section.

Appropriate correction is required.

Claim Objections

5. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 11-14 have been renumbered to 10-13 respectively.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 3709

7. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 12 recites the limitation "said arrangement of light sensors" in the body of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 3709

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US 5,999,836) in view of Sholz ("Towards Virtual Electrical Breast Biopsy: Space-Frequency MUSIC for Trans-Admittance Data", IEEE Trans. Med. Imag., Vol. 21, No. 6, pp. 588-595).

13. The device of Nelson et al. inherently discloses the method steps to localize regions in a biological tissue section (abstract) that, at least during an examination, exhibits a fluorescence property different from the tissue section (the properties are modified by the tissue through which the beam passes, column 18, lines 9-14), due to which, given an exposure with light of a first wavelength (claim 21 step 3), light of another wavelength is emitted (claim 21 step 6), comprising the steps of: applying a sequence of fluorescence-exciting light signals at different locations on the tissue-section (claim 21, step 3), generating the fluorescence-exciting light signals with various modulation frequencies and radiating the light signals into the tissue section (column 15, lines 58-66), measuring fluorescence light arising due to the light signals, at a plurality of measurement locations on a surface of the tissue section, and thereby obtaining response signals (claim 21 step 6), determining frequency-independent signal portions (column 18, lines 9-12) in the response signals and further processing the frequency-independent signal portions (column 18, lines 9-12) into input values for localization (claim 21 step 7), marking the regions with fluorescing markers to generate the various fluorescence properties (column 9, lines 65-67 through column 10, lines 1-4), and

Art Unit: 3709

radiating the fluorescence- exciting light signals as laser light of suitable wavelength (column 15, lines 58-60). Nelson et al. also discloses a device for localizing regions in a biological tissue section (abstract), said biological tissue section, at least during an examination, exhibiting a fluorescence property different from the tissue section (column 18, lines 9-14), said device comprising an arrangement of light sensors 110 distributed on a surface of the tissue section (it would be obvious to one of ordinary skill in the art to move the sensors such that the sensors would be in contact with the surface of the tissue, column 14, lines 3-5 and figures 1b, 2b, and 2c), a laser diode arrangement 112 for emitting fluorescence-exciting light that interacts with a fluorescing marked region in the tissue section (column 9, lines 65-67 through column 10, lines 1-4), causing the marked region to emit fluorescence-excited light that is detected by the light sensors 110 in a two-dimensional measurement value distribution, said light sensors 110 generating response signals corresponding to said two-dimensional measurement value distribution (images are produced by the response signals, column 15, lines 57-63), and a processor (response signals are analyzed by a computer, column 5, lines 62-65) . supplied with said response signals, said processor determining frequency-independent signal portions (column 18, lines 9-12) in the response signals and further processing the frequency-independent signal portions (column 18, lines 9-12) into input values for localization (column 5, lines 62-65), the arrangement of light sensors 110 comprises a first set of light sensors 110 and a second set of light sensors 110 adapted to be respectively disposed on opposite sides of said tissue section (column 14 lines 66-67 through column 15, lines 1-3, and figure 12), comprising an x-ray mammography

apparatus having two compression plates 102, and wherein said light sensor arrangement 110 is integrated into at least one of said compression plates 102 (figure 1b), the arrangement of light sensors 110 comprises a curved mounting 118 for said light sensors (contoured compression plates 118, figure 13a and 13b). With respect to claim 12 as best understood by the examiner is interpreted to depend upon claim 9, Nelson et al. also discloses the arrangement of light sensors 110 comprises a flexible mounting (column 21, lines 58-60 and 65-67, and figure 20).

14. The patent of Nelson et al. does not disclose the method steps of modeling the tissue section and determining a set of guide fields from the model, and transforming the guide fields and comparing the input values processed from the frequency-independent signal portions with the transformed guide fields, and emitting a location of the transformed guide fields that best reproduces the frequency-independent signal portions as a location of the region to be localized, normalizing said guide fields, transforming the guide fields into orthogonal guide fields, determining the orthogonal guide fields from the guide fields by a singular-value decomposition, and determining optical parameters with reference measurements in non-fluorescence-exciting wavelengths by estimation. Nelson et al. also does not disclose a processor for modeling the tissue section and determining a set of guide fields from the model, transforming the guide fields and comparing the input values processed from the frequency-independent signal portions with the transformed guide fields, and emitting a location of the transformed guide fields that best reproduces the frequency-independent signal portions as a location of the region to be localized.

24. However, the publication to Scholz discloses the method steps of modeling the tissue section and determining a set of guide fields from the model (abstract), and transforming the guide fields (section B last paragraph), emitting a location of the transformed guide fields that best reproduces the frequency-independent signal portions as a location of the region to be localized (section C), normalizing said guide fields (section C paragraph 2), transforming the guide fields into orthogonal guide fields (section C paragraph 2), and determining the orthogonal guide fields from the guide fields by a singular-value decomposition (section B). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the method of tissue localization by electrical immittance measurements taught in the publication to Scholz to the device of Nelson et al. to improve breast cancer diagnosis (Scholz, abstract). Furthermore, Nelson et al. discloses that electromagnetic properties of various normal and diseased breast tissues exhibit wavelength dependence (Nelson et al., column 7, lines 21-27), therefore one of ordinary skill in the art would recognize that by comparing the results from the device of Nelson et al. and Scholz, breast cancer localization can be enhanced. The modified device of Nelson et al. in view of Scholz would then render obvious the method steps of comparing the frequency-independent signal portions with the guide fields, emitting a location of the transformed guide fields that best reproduces the frequency-independent signal portions, and determining optical parameters with reference measurements in non-fluorescence-exciting wavelengths.

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Publications to Mosher et al., Huang et al., and Ko all disclose localization by matrix computations involving singular-value decomposition or MUSIC.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Luong whose telephone number is (571) 270-1609. The examiner can normally be reached on Monday - Thursday, 7:30 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrence Till can be reached on (571) 272-1280. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 3709

A handwritten signature in black ink, appearing to read "Terrence R. Till".

Supervisory Patent Examiner

A handwritten signature in black ink, appearing to be the initials "P.L.".

P.L.